

# **RMC Pest Management Consulting**

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## **Actual-Use Field Trials Research Overview and Techniques for Measuring the Efficacy of Black Pearl® Rodent Bait (BPRB) Against House Mice Infesting Multi-Family Housing Complexes \***

### **Overview**

**Types of Buildings MFHC (representing residential accounts)**

**Location**

**Researchers**

### **Materials and Methods**

Bait and AI

Target pest ; house mouse in apartments

Number of MFH buildings

Number of apartments within buildings

Common Areas (list of)

**Selection of baiting points within apartments and common areas**

**Safe- Baiting Practices and Choice of Tamper-Resistant Bait Stations.**

### **Applications and Bait Application Rates**

Estimated range of bait applied per building

Estimated range of bait applied per apartment

Number of Bait Stations Per Building

Number of bait stations Per apartment

Number of bait stations per common areas

### **Pre and Post Treatment Population Metrics (low, medium and high)**

1. Non-Toxic Detex w/Lumitrack Monitoring bait (soft bait/biomarker fluorescent). (Quantitative)
2. Feces counts in test apartments and common areas (Quantitative)
3. Superintendent complaint numbers and distribution (Qualitative)
4. Test apartment tenant complaint (Qualitative)
5. Snap Trapping Post treatment (Quantitative/confirmation).

### **Statistical Notes**

### **Time Line of Black Pearl Actual Use Field Trials (AUFT).**

## Overview

This field research project is initiated by the Lodi Group of Grand Fougeray, France to measure the efficacy of Black Pearl Paste bait under "actual use" techniques and applications, application rates (by pest professionals) against house mice indoors (only) of multi-family housing buildings in urban centers. It is the opinion of RMC Pest Management Consulting, these field trial results can be extrapolated to typical mouse infestations in most other residential scenarios.

### 1. Type and Location of Test Site Buildings (representing residential accounts)

The Black Pearl Paste rodent bait will be tested in three independent multi-family housing complexes (MFHCs) in the Newark, NJ area, although depending on the availability of test sites other areas may be involved as well. The MFHCs will be representative of residential apartment buildings containing 1-3 bedrooms and typical living conditions. The MFHCs will be current customers of The Cooper Pest Solutions Company, of Lawrenceville, N.J.

Selected MFHCs will be those that are currently experiencing house mouse (*Mus musculus*) infestations within individual apartments and the building's common areas. All potential test apartments and associated common areas will be evaluated for the severity level of the infestation (low, moderate or severe) using quantitative and qualitative metrics (see discussion below and Tables 1-4).

### 2. Researchers

The field trials will be conducted by Dr. Bobby Corrigan of RMC Pest Management Consulting with the collaboration of Dr. Richard Cooper of Cooper Pest Solutions (CPS) of Lawrenceville NJ. Supervised servicing pest professionals of CPS will also participate.

### 3. Materials and Methods

#### a. Bait and AI

Trade Name: Black Pearl Paste Rodenticide Bait

Manufacturer:

**Lodi Group**

**Parc d'Activites des Quatre routes 35390**

**Grand Fougeray France**

b. Target Pest; House mice (*Mus musculus*).

c. Application Sites: Indoor Use Only

d. Active Ingredient: (AI): Alphachloralose @ 4.45% (technical grade = 4.0% pure alphachloralose).

Other ingredients: 96.55%

**e. Number of MFH buildings and associated apartments and common areas:**

**(1) Number of apartments within buildings: 6**

Each apartment contains a standard kitchen, utility room, living room, pantry room; bathroom and one or two bedrooms.

**(2) Common Areas Within Each Apartment Building:**

Common areas are included in the field trials to reduce the potential for *common-area mouse populations* (CAMP) replenishing *apartment mouse populations* (AMP) killed via baiting programs (a common occurrence in MFHC mouse infestations).

- a) Laundry rooms
- b) Community rooms
- c) Refuse /compactor room
- d) Basement zones
- e) Utility (boiler/electrical) rooms)

**f. Selection of baiting points within apartments and Common Areas**

**(1). Apartment Building Census and Black Pearl Baiting/ Locations**

Specific intra-building (apartments and common areas) "baiting spots" will be selected by Bobby Corrigan to ensure continuity and a non-confounding effect due to any baiting spot variable. This also helps to maximize mouse encounters (i.e., minimizing false negatives of bait take/efficacy).

**Safe- Baiting Practices and Choice of Tamper-Resistant Bait Stations.**

Two components of safe-baiting practices will be implemented in this study:

1. In all areas of each test apartment and building area, baits will be installed into heavy duty tamper-resistant bait stations and those stations will be installed into only areas inaccessible to children, pets and wildlife as stated on the Black Pearl Paste bait label.
2. All Black Pearl baits (and the non-toxic census blocks also) will only be installed into the industry's most mouse tamper-resistant bait station available (e.g., JT Eaton 906TP Mouse Fortress Plastic Heavy Duty Tamper Resistant (TR) Bait Station with multiple interior baffles and Solid Lid).

This choice of this heavy-duty bait station reflects a goal of above-and-beyond techniques of minimizing any chances of any bait contact whatsoever from any child, adult or pet having any access to the interiors of these TR stations should the stations somehow be moved from their inaccessible areas to visible areas. These stations cannot be opened without special allen-wrench keys and can literally withstand hundreds of pounds of weight applied to their lids before any crushing can occur.

### **1(a): Apartment baiting spots**

Six bait stations will be installed into each test apartment. These bait stations will be used to house both the pre/post treatment Detex monitoring bait and the subsequent Black Pearl test bait. The baiting spots will be the following :

- Kitchen (3): Stove (rear void)(1); Refrigerator(rear floor void)(1); / sink cabinet base (1).
- Living Room (1) below heat register or as indicated by active mouse signs
- Master Bedroom (1) below heat register, or as indicated by active mouse signs
- Utility Room (1) (Out- of-way corners, behind water heater, etc.)

These six locations are highly representative of the harborage, feeding and travel locations of mice infesting residential/ multi-family housing complexes.

### **2(a): Apartment Building Common Areas (bait stations).**

- i. Laundry rooms (2)
- ii. Community rooms (2)
- iii. Refuse /compactor room (4)
- iv. Basement zones (4)
- v. Utility (boiler/electrical) rooms) (2)

### **g. Applications and Bait Application Rates (Range depending on 1 or 2 treatments using 2 sachets of 10 g baits per service visit within each station).**

- 1) Est. Number of JT Eaton's Tamper-Resistant (TR) bait stations per apartment: 6
- 2) Est. Number of TR bait stations per common areas: 14
- 3) Est. Number of TR bait stations per building: 50
- 4) Est. range of bait applied per apartment: : 120-240 g.
- 5) Est. range of bait applied per total building: 1,040 - 2,080 g (1-2kg. )

The amount of bait (and ai) of the total amount applied above required to achieve an acceptable level of control can be estimated post final treatment metric.

### **h. Pre and Post-Treatment Infestation Metrics**

**Five independent metrics ( 3 quantitative; 2 qualitative) will be used to measure the Actual Use Efficacy of Black Pearl alphachloralose bait :**

#### **h(1). *Non-toxic census bait consumption* (Quantitative)**

Non toxic bait consumption will be used to measure feeding activity of mice pre and post treatment. To do this, the non-toxic census bait, ***Detex w/biomarker@by Bell Labs*** will be used. ***Detex*** is a paste style bait (thus facilitating a texture similarity/ and feeding familiarity to the test paste bait) contained within 10 g paper sachets. A yellow fluorescent biomarker has been added to the Detex which is passed into the feces of those mice consuming the Detex. The fluorescent

marker facilitates the tracking of the mice within buildings and apartment areas via identifying fluorescing scats

The Detex baits (and subsequent to pre-treatment Dextex, the Black Pearl baits) will be installed into Bell Laboratory Tamper-Resistant Mini Protecta™ bait stations. The stations will be installed into the baiting spot locations as listed above at : a (1) and a (2).

The census baiting will be conducted for 7 days prior to baiting and measurements of bait take and fecal distribution will be taken at the end of the 7 days (see discussion xx below).

Consumption of the Detex census and (Black Pearl baits) will be done visually as per estimates of:

- a) none;
- b) <25%
- c) 25-50%
- d) 50-75% and
- e) 75-100% of the total bait sachets consumed.<sup>1</sup>

#### **h (2). Mouse Fecal Pellet Counts (Quantitative)**

Both fluorescent non-fluorescent fecal pellets found within each apartment will be recorded for general mouse activity of the apartment of all mice in all accessible areas of the apartments. To quantitate possible different mouse family units, consumption and fecal counts will be recorded according to each room area (e.g., kitchen (3) (sink cabinet base; stove base and refrigerator base) floor heat registers (1 LR:1 BR) utility/pantry/'storage room (1) and so forth.

#### **h (3). Tenant mouse sightings / activity interviews (Qualitative)**

As is done with typical professional pest services addressing residential mouse infestations using baits, pre / post qualitative tenant interview per mouse sightings and activity. Tenants in test infested apartments will be briefly interviewed/surveyed (on a leave-behind sheet) as to their infestation experience in a very similar manner as is done with typical monthly MFHC pest control.

#### **h (4). Property Superintendent Survey; (Qualitative)**

- a. Average number on monthly of apartments requesting mouse treatment services Pre-treatment program vs. same at the 3-week post treatment results.
- b. Overall superintendent's qualitative impression on a property -level and tenant level of the Black Pearl's Performance at the 7/14/21 day Post treatment periods.

#### **h (5). Final trapping index at 21-day post treatment period (Quantitative).**

Mouse snap traps (12) of total of mouse captures will be recorded as an relative index of remaining viable mice (who likely did not consume bait or were not lethally affected).

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<sup>1</sup> To these visual estimates, approximate weights can also be calculated. However, because this is not a bait-dose efficacy study, but rather an "actual use field trial efficacy study", precise bait consumption (e.g. grams consumed) is beyond the scope of this project.

## i. Statistical Notes

- a. Within each of the three apartment buildings, a minimum of six (6) infested apartments will be treated together with an inclusion of the three (3) building common areas (with or without any mouse infestations. To achieve six apartments for final analysis, upwards of 3 additional apartments will be secured (i.e., almost always some tenants tend to drop out of the treatment study; and it is not uncommon for some to further completely deny any further access). If all nine apartments are held to completion of the AUFTs, six of the nine will be randomly selected regardless of any results data and the remaining three "extra apartment" data ignored.
- b. Building type and age, resident density, geographical location/profile and infestation history may be recorded but will not be considered variables to be measured.
- c. Although, infestation severity will be estimated as best as possible (minor, moderate or severe), this trial will qualitatively, but not statistically block on an "infestation severity level" variable.

## j. Estimated Time Line

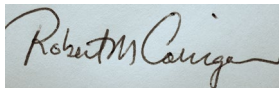
- a. **Mid-November/Early Dec** : Submit to New Jersey Dept. of Environmental Conservation for EUP for Black Pearl Paste (Application has been submitted as of November 28, 2017).
- b. **Late December/ Early January 2018**: Set up of pre-treatment non-toxic baits on site and tenant severity input.
- c. **Early to Mid-February**: Installation of Black Pearl Baits per label and as per detailed mouse activity inspections.
  - 1) One to three week bait availability period (treatment period) depending on feeding cessation period. (Because alphachloralose is characterized as a fast-acting toxicant, periods greater than 14 and 21 days are likely contra-indicated. However, a conservative window is granted to allow for any possible delayed-interaction-behavior from the mice to the baits and/or bait stations.
- d. **Mid March- Mid April**: Post treatment evaluations @ 3-day, 7-day 14-day and 21 day evaluations; bait weight measurements.
- e. **Mid-April -Early June**: Post treatment measurements at 10-24 d (allows for final effect of any alphachloralose active to occur) of non-toxic bait take, snap traps and tenant severity input.
- f. **June /July 2018**: Actual use Field Trail Reports to LODI SAS Group.

## Additional Notes:

1. The goal is to not measure the speed of the treatment (2 day, 3 day, etc. ) ; the goal is to measure the typical reduction as per a typical monthly or bi-weekly service regime within the profile of a professional pest control service.

2. Any buildings or apartments containing abundant clutter, excessive filth, or extreme building-wide infestations) will not be included in these trials.
3. Exterior rodenticide treatments of the selected buildings (with approved and labeled rodenticides) will not be acknowledged because it is assumed exterior mice will not be contributing replenishment sources during the AUFTs.
4. Any apartments with inquisitive dogs will not be used in the study.
5. Apartments with toddlers (below the age of 6 will not be used in the study).
6. A random selection of a dozen or so dead mice encountered during this study among the three buildings without any regard to building, apartment, or common areas will be collected and stored in freezers for possible requests/interests for toxin necropsies.

Submitted:

A handwritten signature in cursive script, reading "Robert M. Corrigan". The signature is written in dark ink on a light-colored background.

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